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IS 13784 (1993): Pesticide - Dodine, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]

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भारतीय मानक

कीटनाशक — डोडिन, तकनीकी — विशिष्टि

Indian Standard

PESTICIDE — DODINE, TECHNICAL — SPECIFICATION

UDC 632·952 DOD

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

May 1993

Price Group 1

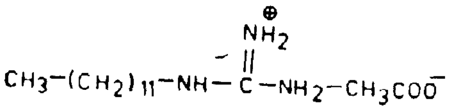
Pesticides Sectional Committee, FAD 1

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pesticides Sectional Committee had been approved by the Food and Agriculture Division Council.

Dodine, technical is employed in the preparation of fungicidal formulations.

Dodine is the proposed common name by the International Organization for Standardization (ISO) for dodecylguanidine acetate. The empirical and structural formulae and molecular mass of dodine are given below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{15}H_{33}N_3O_2$	 $CH_3-(CH_2)_{11}-NH-\overset{\overset{\oplus}{NH_2}}{\overset{-\,\|}{C}}-NH_2-CH_3COO^-$	287·4

In the preparation of this standard, due consideration has been given to the provisions of the *Insecticides Act*, 1968 and the Rules framed thereunder. However, this standard is subjected to the restrictions imposed under the *Act* and Rules wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed, or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

PESTICIDE — DODINE, TECHNICAL — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for dodine, technical.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard.

IS No.	*Title*
1070 : 1992	Reagent grade water (*third revision*)
6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
8069 : 1989	High density polyethylene (HDPE) woven sacks for packing pesticides (*second revision*)
8190 (Part 1) : 1988	Requirements for packing of pesticides : Part 1 Solid pesticides (*second revision*)
10946 : 1984	Methods of sampling for technical grade pesticides

3 REQUIREMENTS

3.1 Description

The material shall be in the form of white to off white crystalline powder free from hard lumps, extraneous impurities of added modifying agent(s).

3.2 The material shall comply with the requirements given in Table 1.

4 PACKING

The material shall be packed in fibre board drums lined with LDPE of thickness not less than 0·125 mm or HDPE woven sacks laminated with 0·025 mm LDPE [*see* IS 8069 : 1989]. The general requirements given in IS 8190 (Part 1) : 1988 shall be followed.

5 MARKING

The container shall bear legibly and indelibly the following information in addition to any other information as is necessary under the *Insecticides Act, 1968* and Rules framed thereunder:

a) Name of the material;

b) Name of the manufacturer;

c) Date of manufacture;

d) Batch number;

e) Dodine content, percent (*m/m*);

f) Net mass of the contents; and

g) The minimum cautionary notice as worded in the *Insecticides Act*, 1968 and Rules framed thereunder.

Table 1 Requirements for Dodine, Technical

(*Clause* 3.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of This Standard	Cl No. of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
i)	Dodine content, percent by mass, *Min*	98	A	—
ii)	Water content, percent by mass, *Max*	1·0	—	4.2
iii)	Alkalinity (as NaOH) percent by mass, *Max*	0·05	—	11.3.2
	OR			
	Acidity (as H_2SO_4) percent by mass, *Max*	0·05	—	11.3.2

6 SAMPLING

Representative samples of the material shall be drawn according to IS 10946 : 1984.

7 TESTS

7.1 Tests shall be carried out by the methods referred to in col 4 and 5 of the Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1992) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

[*Clause* 3.2, *Table* 1, *Item* (i)]

DETERMINATION OF DODINE CONTENT

A-1 PRINCIPLE

Dodine is dissolved in acetic acid — acetic anhydride reagent to produce a solution of the compound that is basic enough to be titrable with perchloric acid using crystal violet as an indicator.

A-2 REAGENTS

A-2.1 Acetic Acid — glacial anhydrous

A-2.2 Acetic Anhydride

A-2.3 Crystal Violet Indicator — 0·1 percent (*m*/*v*) in acetic acid.

A-2.4 Perchloric Acid — 0·1 N.

Dissolve 8·5 ml of 70 percent perchloric acid in glacial acetic acid. Add 15 ml acetic anhydride cautiously and make up to 1 000 ml. Keep overnight.

A-3 PROCEDURE

A-3.1 Weigh accurately about 0·6 g of technical sample and transfer quantitatively into a 250-ml Erlenmeyer flask. Add 90 ml acetic anhydride and 10 ml glacial acetic acid. Warm the contents at 50 — 70°C on a water bath for 5 minutes for complete dissolution. Cool the contents of the flask to room temperature.

Titrate the contents against 0·1 N perchloric acid using crystal violet indicator. The point is indicated by the change of colour of the contents of the flask from violet to blue.

A-3.2 Carry out a blank determination with 90 ml acetic anhydride and 10 ml acetic acid using crystal violet as an indicator.

A-4 CALCULATION

$$\text{Dodine content, percent by mass} = \frac{28{\cdot}74 \times (V_1 - V_2) \times N}{M}$$

where

V_1 = volume, in ml, of standard perchloric acid required for the titration for the sample;

V_2 = volume, in ml, of standard perchloric acid required for blank determination;

N = normality of standard perchloric acid; and

M = mass, in g, of the sample taken for the test.

A-5 STANDARDIZATION OF PERCHLORIC ACID

A-5.1 Procedure

To 900 ml glacial acetic acid at about 25°C add 8·2 ml of perchloric acid (72 percent *w*/*w*), mix. Add 32 ml of acetic anhydride, and again mix. Cool to room temperature, make up the volume to 1 000 ml with glacial acetic acid. Standardize the diluted perchloric acid against 0·200 g potassium hydrogen phthalate, which has been dried to constant weight at 120°C before weighing. Dissolve the potassium hydrogen phthalate in 70 ml acetic acid on a water-bath (about 20 minutes). Add 30 ml of acetic acid, ten drops of crystal violet as indicator. Titrate with diluted perchloric acid. The end point is indicated by the change of colour of the contents of the flask from violet to blue. Calculate the normality (*N*) using the following formula:

A-5.2 Calculation

$$\text{Normality } (N) = \frac{m \times 1\,000}{V - M\ (204{\cdot}22)}$$

where

m = mass, in g, of potassium hydrogen phthalate;

V = volume, in ml, of perchloric acid consumed; and

M = molecular weight of potassium hydrogen phthalate (204·22).

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Amendments Issued Since Publication

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Printed at Paragon Enterprises, Delhi, India